

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086

(For candidates admitted from the academic year 2008-09)

SUBJECT CODE: BT/MC/GG64

B.Sc. DEGREE EXAMINATION, APRIL 2011

BRANCH V(A) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY

SIXTH SEMESTER

COURSE : MAJOR – CORE
PAPER : GENETICS AND GENETIC ENGINEERING
TIME : 3 HOURS MAX. MARKS: 100

SECTION –A

ANSWER ALL THE QUESTIONS

I. CHOOSE THE CORRECT ANSWER: (5 marks)

- The ratio obtained for complementary gene interaction in sweet pea is
a) 9:3:3:1 b) 9:7 c) 15:1
- Plastid inheritance is an example for
a) Sex linkage b) Incomplete Dominance c) Cytoplasmic inheritance
- Hybridisation of DNA is done by
a) Western blotting b) Northern blotting c) Southern blotting
- Which of the following methods of direct DNA delivery does not use naked protoplasts?
a) Gene gun b) Microinjection c) PEG stimulated method of delivery
- The GM crop plants are protected from being misused by the use of
a) Copy right b) Terminator technology c) Trademarks

II. FILL IN THE BLANKS: (5 marks)

- The Rh factor mismatch leads to a condition called _____ in the foetus.
- The phenomenon of Linkage was first explained in *Drosophila* by _____.
- Eco RI is a restriction enzyme found in _____.
- Agrobacterium tumifaciens* causes _____ disease.
- PBR in relation to GM plants refers to _____.

III. STATE WHETHER TRUE OR FALSE: (4 marks)

- Skin colour in Man is determined by many genes.
- Cross over frequency helps to calculate distance between genes.
- Linkers are used for splicing of the gene of interest with the vector.
- Ri plasmid is found in *E.coli*.

IV. MATCH THE FOLLOWING: (4 marks)

- | | | |
|-------------------------|---|-------------------|
| 15. Duplicate genes | - | Barr body |
| 16. Human blood groups | - | Bacteria |
| 17. Dosage compensation | - | 15:1 |
| 18. BAC vectors | - | Multiple alleles. |

V. ANSWER ANY SIX OF THE FOLLOWING, EACH ANSWER NOT EXCEEDING 50 WORDS: (6 x 3 =18)

19. Dominance
20. Blending inheritance
21. Test cross
22. Holandric genes
23. Double crossovers.
24. Adapter
25. YAC
26. Microinjection
27. T - DNA

SECTION -B

VI. ANSWER ANY FOUR OF THE FOLLOWING, EACH ANSWER NOT EXCEEDING 200 WORDS: (4 x 6 =24)

28. Describe the pattern of inheritance of Inhibitory genes in plants.
29. Explain multiple gene inheritance with an example.
30. Write notes on sex linked inheritance.
31. Describe the method of constructing a c- DNA library.
32. Describe Northern Blotting.
33. Give the ethical issues related to GM plants.

SECTION -C

VII. ANSWER ANY TWO OF THE FOLLOWING, EACH ANSWER NOT EXCEEDING 1000 WORDS: (2 x 20 =40)

34. Write an essay on the Laws of Mendel.
35. Describe the phenomenon of Linkage and crossing over and its importance in gene mapping.
36. Describe in detail the various tools used in genetic engineering.
37. Give an account of the various methods of DNA delivery.
